

Release notes for ENDF/B Development n-018\_Ar\_036  
evaluation

**ENDF**  
**B-VII**.dev

April 26, 2017

• psyche Warnings:

1. Strength function in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ISOTOPE MASS = 36. L = 0 / STRENGTH FUNCTION IS 2.72024E+00 / STRENGTH FUNCTION 2.72024E+00 / LIES OUTSIDE LIMITS 1.00000E-04 TO 9.00000E-04 (0): URR str. ftn.*

```
FILE 2
SECTION 151
ISOTOPE MASS = 36. L = 0
STRENGTH FUNCTION IS 2.72024E+00
STRENGTH FUNCTION 2.72024E+00
... [1 more lines]
```

2. Strength function in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 4.65000E+04. STRENGTH FUNCTION IS 9.10001E-05 / STRENGTH FUNCTION 9.10001E-05 / LIES OUTSIDE LIMITS 1.00000E-04 TO 9.00000E-04 (0): URR str. ftn.*

```
FILE 2
SECTION 151
ENERGY = 4.65000E+04. STRENGTH FUNCTION IS 9.10001E-05
STRENGTH FUNCTION 9.10001E-05
LIES OUTSIDE LIMITS 1.00000E-04 TO 9.00000E-04
... [16 more lines]
```

3. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 4.65000E+04. STRENGTH FUNCTION IS 3.30001E-05 / ENERGY = 4.65000E+04. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 4.65000E+04. STRENGTH FUNCTION IS 3.30001E-05
ENERGY = 4.65000E+04. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

4. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 5.00000E+04. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 5.00000E+04. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

5. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 6.00000E+04. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 6.00000E+04. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

6. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 7.00000E+04. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 7.00000E+04. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

7. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 8.00000E+04. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 8.00000E+04. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

8. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 9.00000E+04. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 9.00000E+04. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

9. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

10. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 2.00000E+05. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 2.00000E+05. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

11. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 3.00000E+05. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 3.00000E+05. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

12. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 4.00000E+05. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 4.00000E+05. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

13. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 5.00000E+05. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 5.00000E+05. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

14. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 6.00000E+05. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 6.00000E+05. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

15. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 7.00000E+05. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 7.00000E+05. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

16. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 8.00000E+05. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 8.00000E+05. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

17. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 9.00000E+05. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 9.00000E+05. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

18. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 1.00000E+06. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 1.00000E+06. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

19. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 1.20000E+06. STRENGTH FUNCTION IS 3.30001E-05 / DENSITY 1.70600E+04 SHOULD BE 1.48907E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 1.20000E+06. STRENGTH FUNCTION IS 3.30001E-05
DENSITY 1.70600E+04 SHOULD BE 1.48907E+04
```

20. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 4.65000E+04. STRENGTH FUNCTION IS 1.90000E-04 / ENERGY = 4.65000E+04. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 4.65000E+04. STRENGTH FUNCTION IS 1.90000E-04
ENERGY = 4.65000E+04. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

21. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 5.00000E+04. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 5.00000E+04. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

22. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 6.00000E+04. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 6.00000E+04. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

23. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 7.00000E+04. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 7.00000E+04. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

24. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 8.00000E+04. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 8.00000E+04. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

25. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 9.00000E+04. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 9.00000E+04. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

26. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 1.00000E+05. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

27. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 2.00000E+05. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 2.00000E+05. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

28. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 3.00000E+05. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 3.00000E+05. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

29. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 4.00000E+05. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 4.00000E+05. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

30. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 5.00000E+05. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 5.00000E+05. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

31. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 6.00000E+05. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 6.00000E+05. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

32. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 7.00000E+05. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 7.00000E+05. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

33. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 8.00000E+05. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 8.00000E+05. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

34. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 9.00000E+05. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 9.00000E+05. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

35. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 1.00000E+06. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 1.00000E+06. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

36. Level density in URR not in agreement with PSYCHE's expectations  
*FILE 2 / SECTION 151 / ENERGY = 1.20000E+06. STRENGTH FUNCTION IS 1.90000E-04 / DENSITY 1.42670E+04 SHOULD BE 1.13733E+04 (0): URR dens. (a)*

```
FILE 2
SECTION 151
ENERGY = 1.20000E+06. STRENGTH FUNCTION IS 1.90000E-04
DENSITY 1.42670E+04 SHOULD BE 1.13733E+04
```

37. Non-threshold reaction with Q value differing from PSYCHE's expectations  
*FILE 3 / SECTION 107 / THE CALCULATED Q 2.04695E+06 DISSAGREES WITH THE GIVEN Q -4.86400E+05 (0): Iffy Q*

```
FILE 3
SECTION 107
THE CALCULATED Q 2.04695E+06 DISSAGREES WITH THE GIVEN Q -4.86400E+05
```

- linear Errors:

1. Negative cross section found  
*0: Neg. Sig(E)*

```
Linearize ENDF/B Cross Sections (LINEAR 2015-1)
-----
Retrieval Criteria----- MAT
Monitor Mode----- Off
Minimum Cross Section----- 1.0000E-10 (Default Option)
... [77 more lines]
```

- fudge-4.0 Warnings:

1. Missing a channel with a particular angular momenta combination  
*resonances / resolved / MultiLevelBreitWigner (Error # 0): missingResonanceChannel*

WARNING: Missing a channel with angular momenta combination L = 0, J = 1.5 and S = 1.5 for "capture"

2. Potential scattering hasn't converted, you need more L's!  
*resonances / resolved (Error # 1): potentialScatteringNotConverged*

WARNING: Potential scattering hasn't converged by L=0 at E=46500.0 eV, xs[0]/xs[0]=100.0% > 0.1%

3. Cross section does not match sum of linked reaction cross sections  
*crossSectionSum label 0: total (Error # 0): CS Sum.*

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 17.16%

4. Cross section does not match sum of linked reaction cross sections  
*crossSectionSum label 1: (z,n) (Error # 0): CS Sum.*

WARNING: Cross section does not match sum of linked reaction cross sections! Max diff: 31.44%

- fudge-4.0 Errors:

1. Calculated and tabulated Q values disagree.  
*reaction label 23: n[multiplicity:'2'] + Ar35 (Error # 0): Q mismatch*



WARNING: Calculated and tabulated Q-values disagree: -15318049.63676834 eV vs -1.4838e7 eV!

2. Calculated and tabulated Q values disagree.  
*reaction label 24:  $n + H1 + Cl35$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -8569573.981964111 eV vs -8.507e6 eV!

3. Calculated and tabulated Q values disagree.  
*reaction label 25:  $Ar37 + \gamma$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 8724833.080581665 eV vs 8.788e6 eV!

4. Calculated and tabulated Q values disagree.  
*reaction label 26:  $n + He4 + S32$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -6703362.061611176 eV vs -6.641e6 eV!

5. Calculated and tabulated Q values disagree.  
*reaction label 27:  $He4[multiplicity: '2'] + Si29$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -5177611.522827148 eV vs -5.116e6 eV!

6. Calculated and tabulated Q values disagree.  
*reaction label 28:  $H1 + Cl36\_s$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 10060.68043518066 eV vs -6.809e5 eV!

7. Calculated and tabulated Q values disagree.  
*reaction label 29:  $H2 + Cl35\_s$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: -6345007.881027222 eV vs -5.8363e6 eV!

8. Calculated and tabulated Q values disagree.  
*reaction label 30:  $He4 + S33\_s$  (Error # 0): Q mismatch*

WARNING: Calculated and tabulated Q-values disagree: 1938253.283176422 eV vs -4.864e5 eV!

- njoy2012 Warnings:

1. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!  
*group...compute self-shielded group-averaged cross-sections (0): GROUPT/conver (0)*

---message from conver---cannot do complete particle production for mt= 16  
only mf4/mf5 provided

2. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!  
*group...compute self-shielded group-averaged cross-sections (1): GROUPT/conver (0)*

---message from conver---cannot do complete particle production for mt= 22  
only mf4/mf5 provided

3. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!  
*groupr...compute self-shielded group-averaged cross-sections (2): GROUPR/conver (0)*

```
---message from conver---cannot do complete particle production for mt= 28
                        only mf4/mf5 provided
```

4. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!  
*groupr...compute self-shielded group-averaged cross-sections (3): GROUPR/conver (0)*

```
---message from conver---cannot do complete particle production for mt= 91
                        only mf4/mf5 provided
```

- **acelst** Warnings:

1. generic warning message  
*0: Warning*

```
ACELST WARNING - More than one range for MF/MT          6          91
STOP ACELST Completed
```